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Birger Drugge

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EXAMINER

SINCLAIR, DAVID M

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,386	<b>Applicant(s)</b> DRUGGE ET AL.	
	<b>Examiner</b> DAVID M. SINCLAIR	<b>Art Unit</b> 2831	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10-21, 25, 27-32, 34 and 37-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 10-21, 25, 27-29, 31, 32, 34, 40 and 41 is/are rejected.
- 7) ☒ Claim(s) 5-7, 30 and 37-39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>26 June 2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 28 August 2009 have been fully considered but they are not persuasive.

Applicant argues "Eriksson et al. does not disclose the invention recited in independent claims 1 or 25 since, among other things, Eriksson et al. does not disclose a power capacitor that includes protrusions that have a thickness and radial length such that the protrusions cool the capacitor. Rather, Eriksson et al. discloses a structure that includes a central axial channel running through each capacitor element. Forced cooling may be carried out through the central axial channel to facilitate cooling. On the other hand, the claimed invention includes a structure that can cool at least one capacitor element enclosed in at least one insulating medium that is in a state different from a liquid state within the working temperature interval of the capacitor. Protrusions for extending the creepage distance typically do not improve the cooling inside the housing. Eriksson et al. discloses a different solution to this problem."

Although, Eriksson does not explicitly discloses the protrusions cooling the capacitor; the protrusions would inherently cool the capacitor. The protrusions would increase the surface area allowing for more effective heat dissipation, or cooling. Therefore, Eriksson explicitly/implicitly/inherently discloses the invention as claimed in independent claims 1 & 25.

Applicant argues allowability of all dependent claims based on the claims dependency from independent claims 1 & 25, however, claims 1 & 25 stand rejected.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 10, 21, 25, 31-32, & 40-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Eriksson et al. (2003/0142457).

In regards to claim 1, Eriksson '457 discloses

A power capacitor (title), comprising at least one capacitor element (2a-2d – fig. 1; abstract) enclosed in a substantially cylindrical container (1 – fig. 1; abstract) of a material that substantially comprises a first polymer material ([0019]), and wherein an envelope surface of the container comprises a plurality of protrusions (11 – fig. 7; [0031] & [0073]) designed to extend a creepage distance along the container, wherein the protrusions are substantially comprise a second polymer material ([0073] – implied protrusions are same material of container), wherein the protrusions have a thickness and radial length so such that the protrusions

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cool the capacitor (protrusions inherently cool the capacitor), and wherein the at least one capacitor element is enclosed in at least one insulating medium that is not in a liquid state within a working temperature interval of the capacitor ([0062]).

In regards to claim 4, Eriksson '457 discloses

The power capacitor according to claim 1, wherein substantially all of the envelope surface of the power capacitor is covered with a plurality of the protrusions (fig. 7).

In regards to claim 10, Eriksson '457 discloses

The power capacitor according to claim 1, wherein the first polymer material and the second polymer material are the same ([0073]).

In regards to claim 21, Eriksson '457 discloses

The power capacitor according to claim 1, wherein the capacitor comprises at least one tubular element running in a cylinder direction and extending through each capacitor element ([0064]).

In regards to claim 25, Eriksson '457 discloses

A method for manufacturing a power capacitor (title) comprising at least one capacitor element (2a-2d – fig. 1; abstract) enclosed in a substantially cylindrical

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container 1 – fig. 1; abstract) made of a material that substantially comprises a first polymer material ([0019]), wherein an envelope surface of the container comprises a plurality of protrusions (11 – fig. 7; [0031] & [0073]) designed so as to extend the creepage distance along the container, the protrusions are made of a second polymer material ([0073] – implied protrusions are same material of container), the method comprising: forming the protrusions with a length and a width such that the protrusions cool the capacitor (protrusion will inherently cool capacitor), encapsulating the at least one capacitor element in a container (fig. 1), and enclosing the at least one capacitor element in at least one insulating medium that is not in a liquid state with a working temperature interval of the capacitor ([0062]).

In regards to claim 31, Eriksson '457 discloses

The method according to claim 27, wherein a cylindrical polymer tube is provided for forming the container, wherein the protrusions are applied to the polymer tube, whereby the tube comprises polyethylene, and wherein the at least one capacitor element is placed in the polymer tube ([0062] & [0031]).

In regards to claim 32, Eriksson '457 discloses

The method according to claim 27, wherein each capacitor element prior to injection molding is applied to a tubular element extending through each capacitor element ([0064]).

In regards to claim 40, Eriksson '457 discloses

The method according to claim 25, further comprising: utilizing the capacitor element at voltages exceeding 1 kV ([0063]).

In regards to claim 41, Eriksson '457 discloses

The method according to claim 25, further comprising: installing the capacitor in a system for transmission of alternating current ([0003]).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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6. Claims 2-3, 8, & 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson '457.

In regards to claim 2,

Eriksson '457 discloses the claimed invention except for the protrusions comprise at least one protrusion with a thickness in the interval of 0.2-10 mm and a radial length in the interval of 5-50 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form at least one protrusion with a thickness in the interval of 0.2-10 mm and a radial length in the interval of 5-50 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 3,

Eriksson '457 discloses the claimed invention except for the protrusions comprise at least one protrusion with a thickness in the interval of 1-4 mm and a radial length in the interval of 10-25 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form at least one protrusion with a thickness in the interval of 1-4 mm and a radial length in the interval of 10-25 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.



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In regards to claim 8,

Eriksson '457 discloses the claimed invention except for the protrusions are arranged with an axial pitch in the interval of 5-25 mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the protrusions with an axial pitch in the interval of 5-25 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 11,

Eriksson '457 discloses the claimed invention except for the insulating medium, the container, and the protrusions of the container are all for the most part of rubber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to for the most part form the insulating medium, the container, and the protrusions of the container of rubber, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 12,

Eriksson '457 discloses the claimed invention except for the insulating medium, the container, and the protrusions of the container all comprise same kind of

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rubber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the insulating medium, the container, and the protrusions of the container of the same kind of rubber, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 13,

Eriksson '457 discloses the claimed invention except for the insulating medium, the container, and the protrusions of the container are all substantially comprise a thermoset rubber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to substantially form the insulating medium, the container, and the protrusions of the container of a thermoset rubber, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 14,

Eriksson '457 discloses the claimed invention except for the insulating medium, the container, and the protrusions of the container comprise a same kind of thermoset polymer, and wherein the thermoset rubber is based on one of the following materials: epoxy, polyurethane, or polyester. It would have been

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obvious to one having ordinary skill in the art at the time the invention was made to form the insulating medium, the container, and the protrusions of the container of the same kind of thermoset rubber based on one of the following material: epoxy, polyurethane, or polyester, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 15,

Eriksson '457 discloses the claimed invention except for the insulating medium, the container, and the protrusions of the container are injection-molded in one single piece. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the insulating medium, the container, and the protrusions of the container in one single piece, since it has been held that forming in one piece an article which has formally been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

7. Claims 16-20, 27-29, & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriksson '457 in view of Ramarge et al. (2002/0100605).

In regards to claim 16,

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The reference as applied above discloses all the limitations of claim 16 except wherein the container and the protrusions of the container comprise different polymer materials.

Ramarge '605 discloses a container with protrusions wherein the container and the protrusions of the container comprise different polymer materials ([0045]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the container and the protrusions of Eriksson '457 of a different polymer material as taught by Ramarge '605 to obtain a capacitor with a hydrophobic housing which reduces leakage current and dry band arcing.

In regards to claim 17,

The reference as applied above discloses all the limitations of claim 17 except the container comprises polyethylene and the protrusions comprise silicone rubber or EPDM. However, Eriksson '457 discloses the container is of polyethylene ([0019]). Erikson '457 fails to disclose the protrusions are of silicone rubber or EPDM.

Ramarge '605 discloses the protrusions are of silicone rubber or EPDM ([0045]).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the protrusions of Eriksson '457 of a silicone rubber as taught by Ramarge '605 to obtain a capacitor with a hydrophobic housing which reduces leakage current and dry band arcing.

In regards to claim 18,

The reference as applied above discloses all the limitations of claim 18 except wherein the container comprises fiber-reinforced thermoset polymer and the protrusions comprise silicone rubber or EPDM.

Ramarge '605 discloses the protrusions comprise silicone rubber or EPDM ([0045]). Ramarge '605 fails to disclose the container is of fibre-reinforced thermoset.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the protrusions of Eriksson '457 of a silicone rubber as taught by Ramarge '605 to obtain a capacitor with a hydrophobic housing which reduces leakage current and dry band arcing.

The references disclose the claimed invention except for the container is of fibre-reinforced thermoset. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the container of a fibre-

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reinforced thermoset, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 19,

The references disclose the claimed invention except the insulating medium comprises silicone in gel state. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the insulating gel medium of silicone, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 20,

The references disclose the claimed invention except the insulating medium is based on a thermoset polymer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a thermoset polymer for the insulating, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 27,

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The reference as applied above discloses all the limitations of claim 27 except, the manufacture of the container, the application of the protrusions, the encapsulation of the at least one capacitor element and the enclosure in the insulating medium comprise injection molding.

Ramarge '605 discloses using injection molding to form the insulating housing and protrusions ([0039]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use injection molding as taught by Ramarge '605 to form the container, protrusions, and insulating medium of Eriksson '457 to manufacture the power capacitor with minimal loss of scrap material and minimal finishing requirements reducing the cost and time to manufacture.

In regards to claim 28,

The reference as applied above discloses all the limitations of claim 27 except the first polymer material and the second polymer material comprise is rubber.

Ramarge '605 discloses the first polymer material and the second polymer material comprise is rubber ([0039]).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to use rubber as taught by Ramarge '605 to form the container, protrusions, and insulating medium of Eriksson '457 to obtain a capacitor with a hydrophobic housing which reduces leakage current and dry band arcing.

In regards to claim 29,

The reference as applied above discloses all the limitations of claim 29 except the injection molding comprises in one single step and with one single material.

Ramarge '605 discloses the injection molding comprises in one single step and with one single material ([0039]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a single injection molding step as taught by Ramarge '605 to form the container, protrusions, and insulating medium of Eriksson '457 to reduce the time for manufacturing.

In regards to claim 34,

The reference as applied above discloses all the limitations of claim 34 except wherein the protrusions are applied to the container by injection molding, by winding the protrusions in a spiral around the container, or by providing the



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protrusions as prefabricated sleeve-like elements which are threaded onto the container.

Ramarge '605 discloses wherein the protrusions are applied to the container by injection molding, by winding the protrusions in a spiral around the container, or by providing the protrusions as prefabricated sleeve-like elements which are threaded onto the container ([0039]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use injection molding as taught by Ramarge '605 to form the protrusions of Eriksson '457 to manufacture the power capacitor with minimal loss of scrap material and minimal finishing requirements reducing the cost and time to manufacture.

#### ***Allowable Subject Matter***

8. Claims 5-7, 30, & 37-39 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SINCLAIR whose telephone number is (571)270-5068. The examiner can normally be reached on Mon - Thurs. 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Gutierrez/  
Supervisory Patent Examiner, Art Unit 2831

/D. M. S./  
Examiner, Art Unit 2831